



DOLBY ATMOS MUSIC

The Pro Tools users' guide to delivering a Dolby Atmos mix

This guide is intended to get you up to speed with the software tools from Dolby and Avid in order to enable you to create your first music mix in Dolby Atmos.

What is Dolby Atmos Music?

Dolby Atmos was originally created as the next generation format for cinema sound, designed, based on feedback from film re-recording mixers. Following widespread theatrical adoption, this technology has filtered down into the Home Cinema environment for both film and TV content spanning drama, documentary, and live events. This is consumed over traditional TV broadcast, as well as online streaming platforms such as Netflix, Amazon Prime Video, and Apple TV+.

Dolby Atmos Music is a revolutionary new 'object based' immersive audio format for music production. This new format allows artists to push their creative boundaries. With Dolby Atmos Music, mixers have the ability to place and move sounds in a 3D environment with more precision, allowing for even more creative possibilities. Now, producers can create tracks that allow listeners to feel like they're inside their favourite music.

Why produce music in Dolby Atmos?

Today, hundreds of movies, television shows, and video games are already produced in Dolby Atmos, and each year more and more loudspeakers and home theatre set-ups are equipped to bring immersive audio to the everyday listener. Now with the release of the Amazon Echo Studio along with TIDAL adding a Dolby Atmos option to their streaming service, demand for immersive music is set to increase.

Even prior to the release of the Amazon Echo Studio, music has been a huge element of film and TV content, and with more of this content being mixed and consumed in Dolby Atmos, the techniques in the mix for the reproduction of scores and soundtracks has evolved, producing really incredible results. Films such as 'Bohemian Rhapsody' and 'Rocketman' are incredibly engaging and immersive, and this has led to the demand for, and production of, music-only content mixed in Dolby Atmos.

As noted earlier, several major streaming platforms are really pushing the format, with over a thousand tracks already available through Amazon with their Music HD service and Amazon Echo Studio speaker and TIDAL. The tools available for this new and exciting format allow artists to further explore the creative possibilities of a mix.



We hope you enjoy this guide and if you have questions about Dolby Atmos Music reach out to us at contact@hnb.co.uk



Getting Started

The main software for authoring content is called the Dolby Atmos Production Suite (DAPS – Mac only – available on the [Avid Store](#), and as a 30-day trial from Dolby [here](#)), which is a standalone application providing tools to produce immersive Dolby Atmos mixes in Pro Tools or Nuendo with plans to support Apple Logic Pro and Ableton Live in the future. We'll focus on Pro Tools Ultimate for this getting started guide, however it's a very similar setup process in Nuendo. Pro Tools Ultimate is required due to the stereo limitation of Pro Tools Standard – we recommend 2019.12 or higher.

To begin we suggest downloading our HHB Dolby Atmos Getting Started Pro Tools Template [here](#).

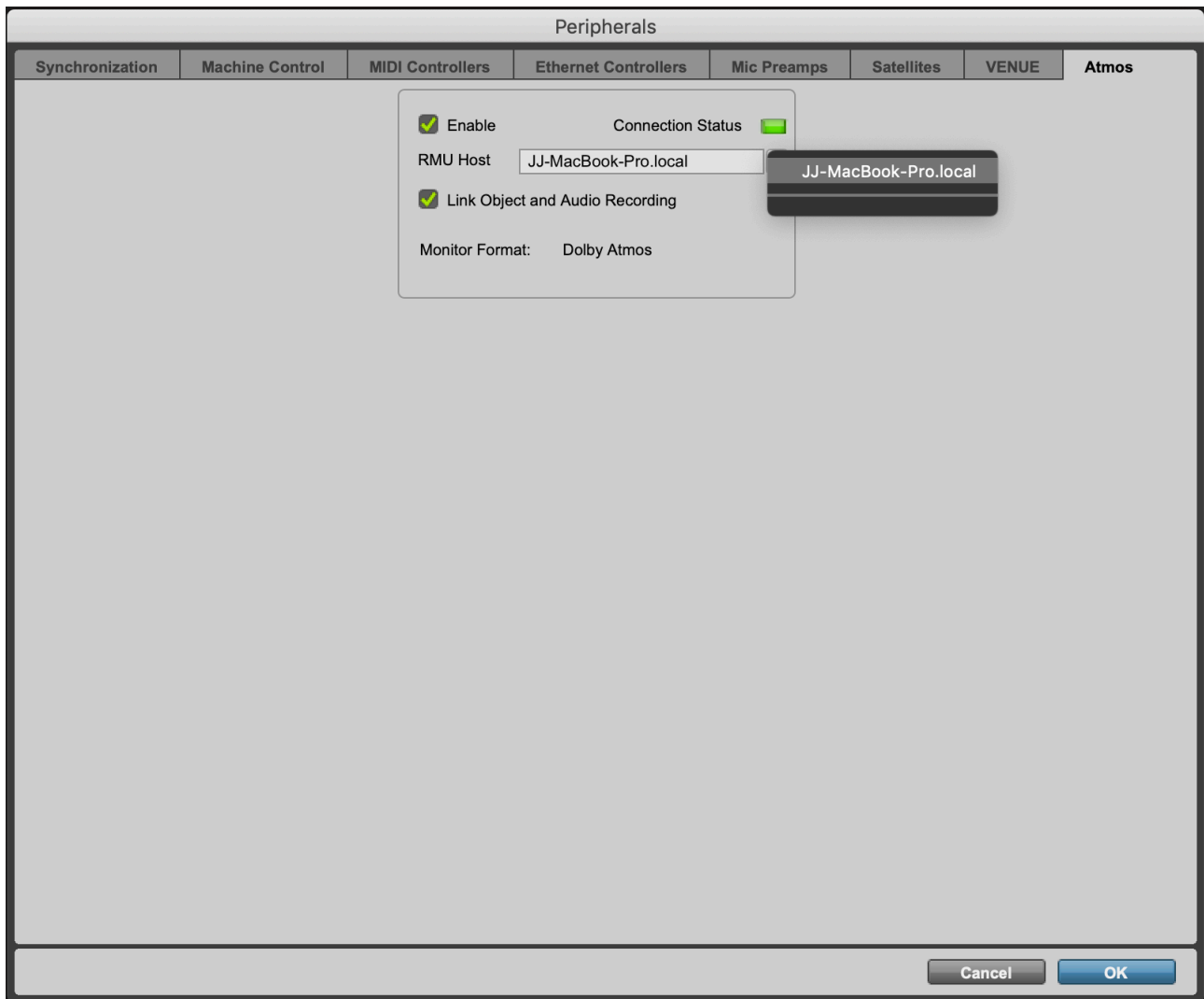
Begin by installing and launching both Pro Tools and DAPS. On the DAPS installer, make sure the, 'Dolby Audio Bridge', is checked – this will require a reboot. You may also need to approve the driver in Mac OS **System Preferences / Security & Privacy**.

Don't open a session just yet

Having installed and launched both Pro Tools and DAPS, we need to get them communicating with each other. Dolby Atmos relies upon user generated, 'object metadata'. Think of an audio 'object' as a unique, mono (or stereo) track, such as a guitar or vocal track. The metadata is predominantly panning information, sent from our Pro Tools Surround Panner, much like lanes of automation. An 'object' can be panned within a 3D space, represented as a cube in the Pan Window.

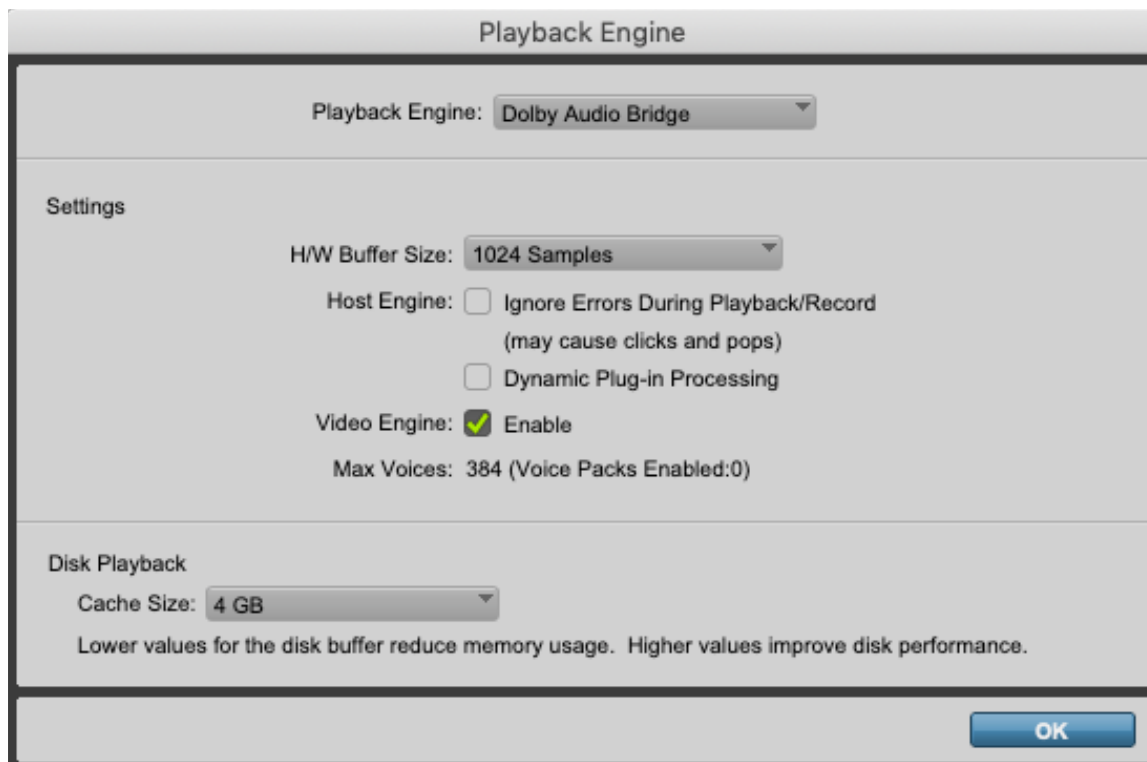
Getting Started continued:

We enable this link via the **Setup / Peripherals** dialog, on the Atmos tab. Checking the 'Enable' box and selecting your computer in the drop-down list will make this connection – we should see a solid green 'Connection Status' light.



Getting Started continued:

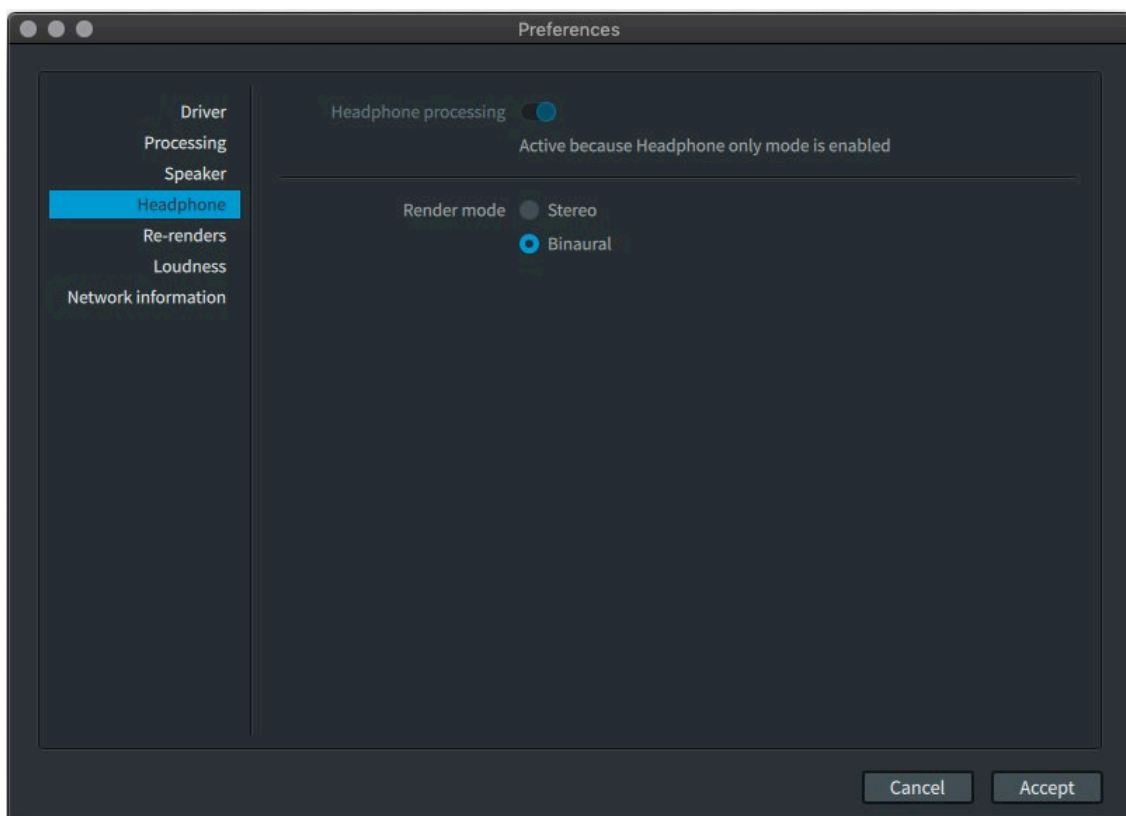
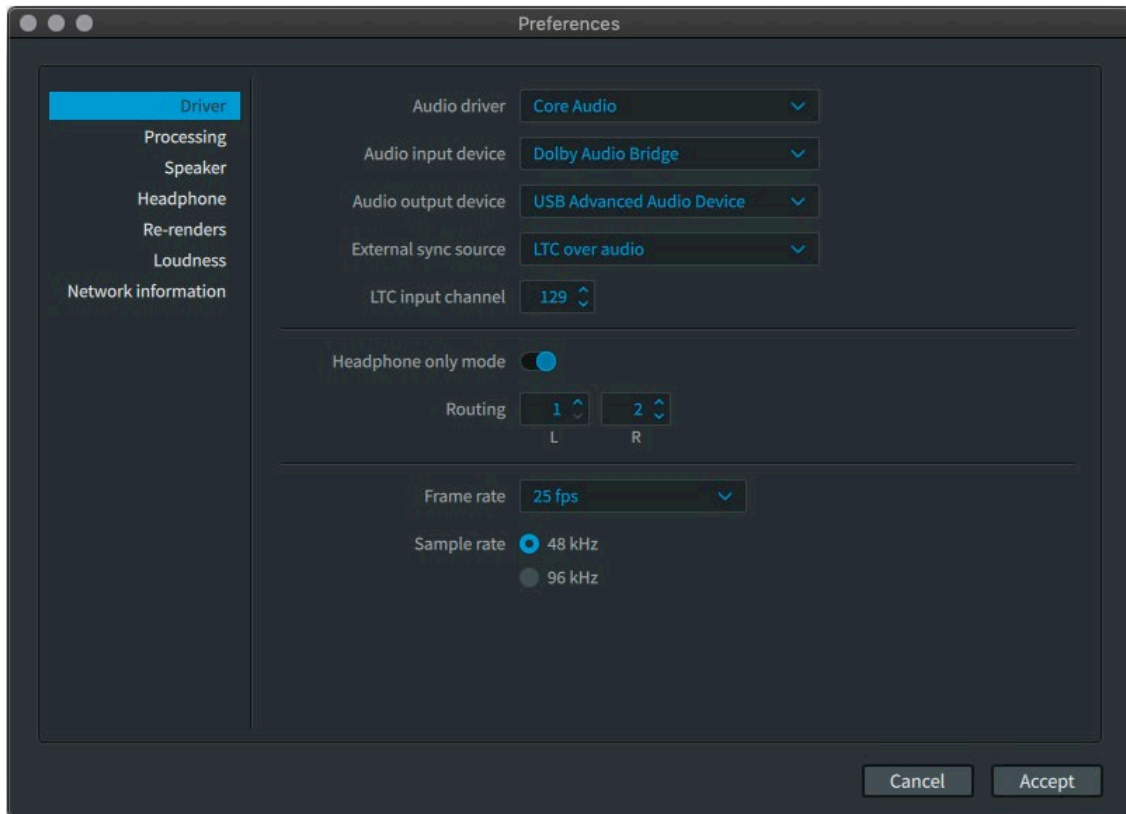
Next, we'll need to set our Pro Tools 'Playback Engine' to the 'Dolby Audio Bridge' in order to route audio directly from Pro Tools to the Dolby software. This is done in the **Setup / Playback Engine** dialog. Dolby also recommend a 1024 Sample Buffer for 48kHz (2048 for 96kHz, which also limits you to 64 total channels).



Now let's set-up the Dolby software. In **DAPS / Preferences / Driver**, we'll set our 'Audio driver' to 'Core Audio', and our 'Audio input device' to 'Dolby Audio Bridge'. Our 'Audio output device' should be set to a relevant output option in your studio – generally your main audio I/O. In this same dialog, we'll also configure the 'External sync source' to 'LTC over audio' and our 'LTC input channel' to 129. We can also set our Dolby Atmos Master File, 'Frame rate' and 'Sample rate' – we'll use 25 fps and 48kHz for now.

To finish setting up the DAPS software, we'll need to configure our monitoring. If you're going to be monitoring on headphones, enable 'Headphone only mode', hit 'Accept', and skip the next section on speaker configurations. The headphone render can be a stereo fold-down or a binaural render, which generally does a good job of emulating a sense of height and space - we'd recommend trying it. This is selected in **Preferences / Headphone / Stereo/Binaural**

Getting Started continued:





Speaker Configurations

Having accepted our driver preferences, jump to the section of this guide most relevant to your monitoring configuration.

Speaker Set Up

Stereo

For stereo, it's really quick to set up (for those that just want to use Output 1 & 2 for Left & Right) - we can use the '2.0' preset of the default 'Monitoring' configurations provided by DAPS. These are selected in the top left-hand corner of the main DAPS window. If you need channels other than 1 & 2, see 'Routing' in the 7.1.4 section.



Speaker Set Up continued:

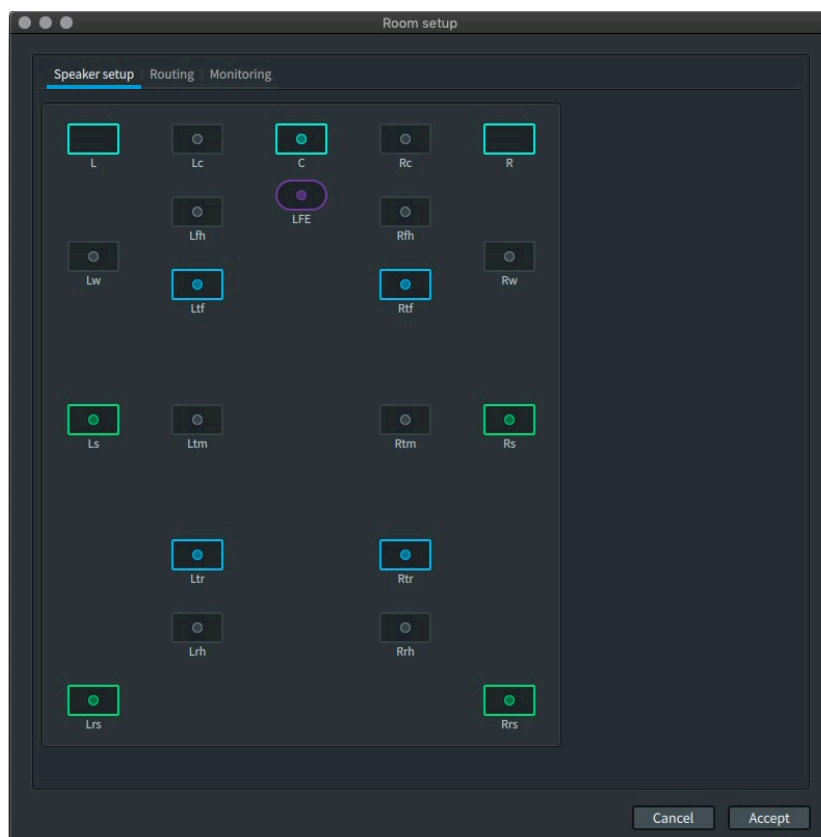
5.1

For 5.1, it's similar to the stereo setup, but select '5.1' in the 'Monitoring' menu. The default channel order is Left, Right, Centre, LFE, Left Surround, Right Surround (ch1-6). In order to change this, see 'Routing' in the 7.1.4 section.

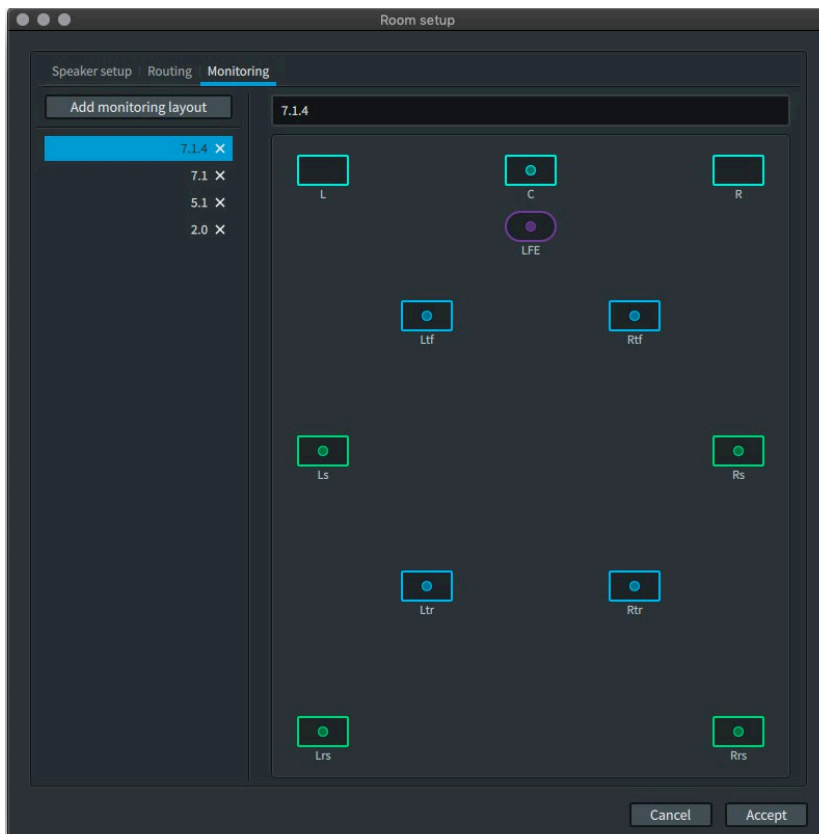
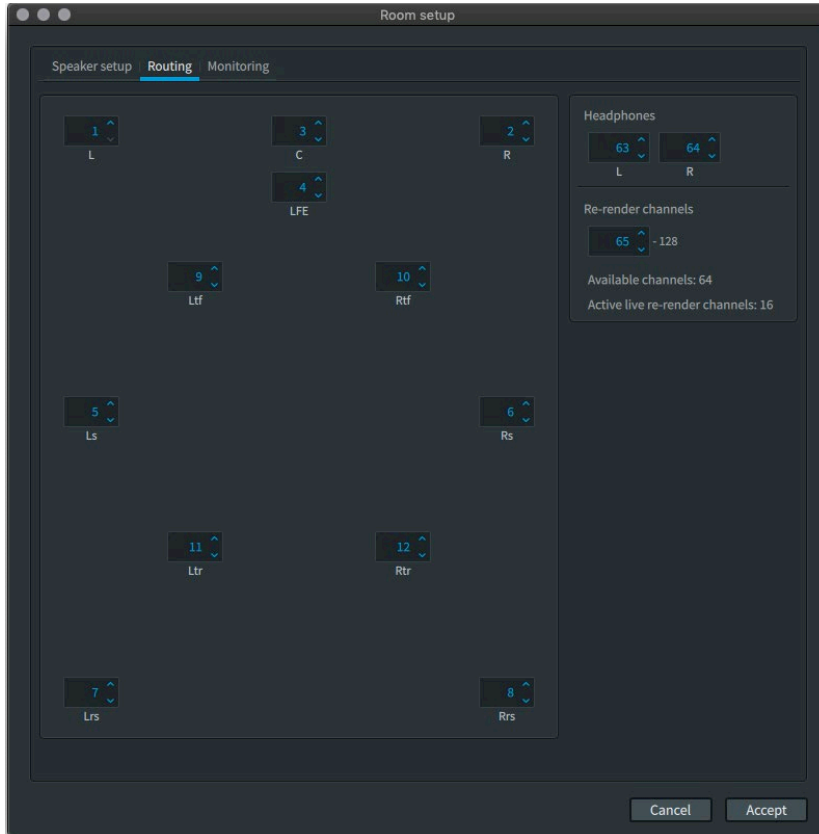
7.1.4/other

If you have 7.1.4 or another speaker configuration, you need to go into **Window / Room Setup** to configure our 'Speaker setup' and channel 'Routing'.

In 'Speaker setup' we can enable or disable speaker channels by clicking on them in order to match our room configuration. The 'Routing' tab allows us to change our output channel for each speaker output from DAPS to match the interface output patching to your speakers.



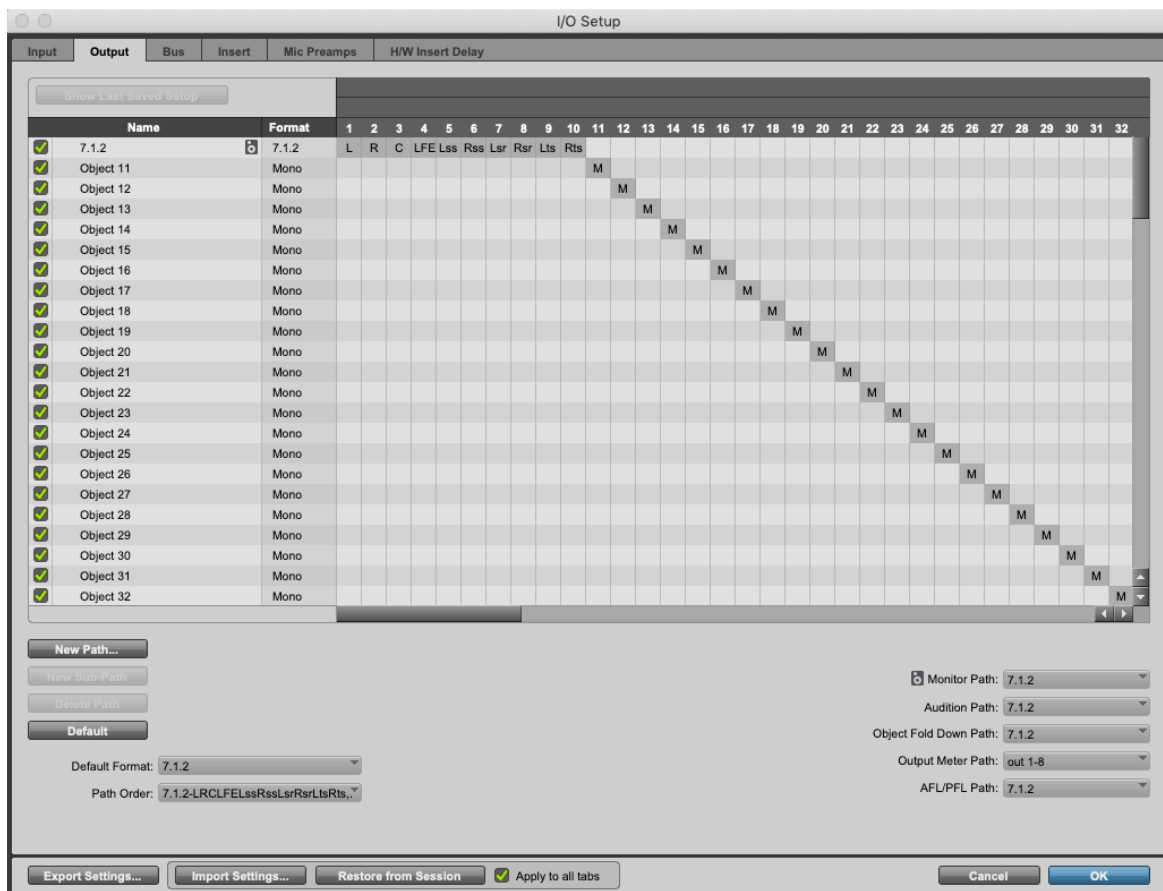
Speaker Set Up continued:



I/O Set Up

Finally, we need to configure our I/O setup and Pro Tools session – for the purpose of getting started quickly, let’s use the, “HHB Dolby Atmos Getting Started Template”, to start. We recommend backing up your I/O setup before launching the template.

On launching our template, it’ll prompt to save your new session – select somewhere relevant, then let it load, but don’t hit play just yet. You’ll likely need to go to the ‘I/O Setup’ and select ‘Restore from Session’ with ‘Apply to all tabs’ selected. Should there be an error such as, “Unable to read the I/O settings file”, or another issue with this, try importing our I/O setup backup from here. This will sort out our ‘I/O Setup’ so that we can quickly test our audio routing, before moving on to import your own audio into our session template & mix it in Dolby Atmos using the new 3D panner tools available. The ‘I/O Setup’ ‘Output’ & ‘Bus’ pages should look something like this:



I/O Set Up continued:

I/O Setup

Input Output Bus Insert Mic Preamps H/W Insert Delay

Name	Format	Channels										Mapping to Output		Mapping to Object	
		L	C	R	Lss	Rss	Lsr	Rsr	LFE	Lts	Rts				
7.1.2	7.1.2											7.1.2	5		
Object 11	Mono	M									<input checked="" type="checkbox"/>	Object 11	<input checked="" type="checkbox"/>	Input 11	
Object 12	Mono	M									<input checked="" type="checkbox"/>	Object 12	<input checked="" type="checkbox"/>	Input 12	
Object 13	Mono	M									<input checked="" type="checkbox"/>	Object 13	<input checked="" type="checkbox"/>	Input 13	
Object 14	Mono	M									<input checked="" type="checkbox"/>	Object 14	<input checked="" type="checkbox"/>	Input 14	
Object 15	Mono	M									<input checked="" type="checkbox"/>	Object 15	<input checked="" type="checkbox"/>	Input 15	
Object 16	Mono	M									<input checked="" type="checkbox"/>	Object 16	<input checked="" type="checkbox"/>	Input 16	
Object 17	Mono	M									<input checked="" type="checkbox"/>	Object 17	<input checked="" type="checkbox"/>	Input 17	
Object 18	Mono	M									<input checked="" type="checkbox"/>	Object 18	<input checked="" type="checkbox"/>	Input 18	
Object 19	Mono	M									<input checked="" type="checkbox"/>	Object 19	<input checked="" type="checkbox"/>	Input 19	
Object 20	Mono	M									<input checked="" type="checkbox"/>	Object 20	<input checked="" type="checkbox"/>	Input 20	
Object 21	Mono	M									<input checked="" type="checkbox"/>	Object 21	<input checked="" type="checkbox"/>	Input 21	
Object 22	Mono	M									<input checked="" type="checkbox"/>	Object 22	<input checked="" type="checkbox"/>	Input 22	
Object 23	Mono	M									<input checked="" type="checkbox"/>	Object 23	<input checked="" type="checkbox"/>	Input 23	
Object 24	Mono	M									<input checked="" type="checkbox"/>	Object 24	<input checked="" type="checkbox"/>	Input 24	
Object 25	Mono	M									<input checked="" type="checkbox"/>	Object 25	<input checked="" type="checkbox"/>	Input 25	
Object 26	Mono	M									<input checked="" type="checkbox"/>	Object 26	<input checked="" type="checkbox"/>	Input 26	
Object 27	Mono	M									<input checked="" type="checkbox"/>	Object 27	<input checked="" type="checkbox"/>	Input 27	
Object 28	Mono	M									<input checked="" type="checkbox"/>	Object 28	<input checked="" type="checkbox"/>	Input 28	
Object 29	Mono	M									<input checked="" type="checkbox"/>	Object 29	<input checked="" type="checkbox"/>	Input 29	
Object 30	Mono	M									<input checked="" type="checkbox"/>	Object 30	<input checked="" type="checkbox"/>	Input 30	
Object 31	Mono	M									<input checked="" type="checkbox"/>	Object 31	<input checked="" type="checkbox"/>	Input 31	
Object 32	Mono	M									<input checked="" type="checkbox"/>	Object 32	<input checked="" type="checkbox"/>	Input 32	
Object 33	Mono	M									<input checked="" type="checkbox"/>	Object 33	<input checked="" type="checkbox"/>	Input 33	
Object 34	Mono	M									<input checked="" type="checkbox"/>	Object 34	<input checked="" type="checkbox"/>	Input 34	
Object 35	Mono	M									<input checked="" type="checkbox"/>	Object 35	<input checked="" type="checkbox"/>	Input 35	
Object 36	Mono	M									<input checked="" type="checkbox"/>	Object 36	<input checked="" type="checkbox"/>	Input 36	
Object 37	Mono	M									<input checked="" type="checkbox"/>	Object 37	<input checked="" type="checkbox"/>	Input 37	
Object 38	Mono	M									<input checked="" type="checkbox"/>	Object 38	<input checked="" type="checkbox"/>	Input 38	
Object 39	Mono	M									<input checked="" type="checkbox"/>	Object 39	<input checked="" type="checkbox"/>	Input 39	
Object 40	Mono	M									<input checked="" type="checkbox"/>	Object 40	<input checked="" type="checkbox"/>	Input 40	
Object 41	Mono	M									<input checked="" type="checkbox"/>	Object 41	<input checked="" type="checkbox"/>	Input 41	
Object 42	Mono	M									<input checked="" type="checkbox"/>	Object 42	<input checked="" type="checkbox"/>	Input 42	
Object 43	Mono	M									<input checked="" type="checkbox"/>	Object 43	<input checked="" type="checkbox"/>	Input 43	
Object 44	Mono	M									<input checked="" type="checkbox"/>	Object 44	<input checked="" type="checkbox"/>	Input 44	
Object 45	Mono	M									<input checked="" type="checkbox"/>	Object 45	<input checked="" type="checkbox"/>	Input 45	
Object 46	Mono	M									<input checked="" type="checkbox"/>	Object 46	<input checked="" type="checkbox"/>	Input 46	
Object 47	Mono	M									<input checked="" type="checkbox"/>	Object 47	<input checked="" type="checkbox"/>	Input 47	
Object 48	Mono	M									<input checked="" type="checkbox"/>	Object 48	<input checked="" type="checkbox"/>	Input 48	
Object 49	Mono	M									<input checked="" type="checkbox"/>	Object 49	<input checked="" type="checkbox"/>	Input 49	
Object 50	Mono	M									<input checked="" type="checkbox"/>	Object 50	<input checked="" type="checkbox"/>	Input 50	
Object 51	Mono	M									<input checked="" type="checkbox"/>	Object 51	<input checked="" type="checkbox"/>	Input 51	
Object 52	Mono	M									<input checked="" type="checkbox"/>	Object 52	<input checked="" type="checkbox"/>	Input 52	
Object 53	Mono	M									<input checked="" type="checkbox"/>	Object 53	<input checked="" type="checkbox"/>	Input 53	
Object 54	Mono	M									<input checked="" type="checkbox"/>	Object 54	<input checked="" type="checkbox"/>	Input 54	
Object 55	Mono	M									<input checked="" type="checkbox"/>	Object 55	<input checked="" type="checkbox"/>	Input 55	
Object 56	Mono	M									<input checked="" type="checkbox"/>	Object 56	<input checked="" type="checkbox"/>	Input 56	
Object 57	Mono	M									<input checked="" type="checkbox"/>	Object 57	<input checked="" type="checkbox"/>	Input 57	
Object 58	Mono	M									<input checked="" type="checkbox"/>	Object 58	<input checked="" type="checkbox"/>	Input 58	
Object 59	Mono	M									<input checked="" type="checkbox"/>	Object 59	<input checked="" type="checkbox"/>	Input 59	
Object 60	Mono	M									<input checked="" type="checkbox"/>	Object 60	<input checked="" type="checkbox"/>	Input 60	
Object 61	Mono	M									<input checked="" type="checkbox"/>	Object 61	<input checked="" type="checkbox"/>	Input 61	
Object 62	Mono	M									<input checked="" type="checkbox"/>	Object 62	<input checked="" type="checkbox"/>	Input 62	
Object 63	Mono	M									<input checked="" type="checkbox"/>	Object 63	<input checked="" type="checkbox"/>	Input 63	
Object 64	Mono	M									<input checked="" type="checkbox"/>	Object 64	<input checked="" type="checkbox"/>	Input 64	
Object 65	Mono	M									<input checked="" type="checkbox"/>	Object 65	<input checked="" type="checkbox"/>	Input 65	
Object 66	Mono	M									<input checked="" type="checkbox"/>	Object 66	<input checked="" type="checkbox"/>	Input 66	
Object 67	Mono	M									<input checked="" type="checkbox"/>	Object 67	<input checked="" type="checkbox"/>	Input 67	
Object 68	Mono	M									<input checked="" type="checkbox"/>	Object 68	<input checked="" type="checkbox"/>	Input 68	
Object 69	Mono	M									<input checked="" type="checkbox"/>	Object 69	<input checked="" type="checkbox"/>	Input 69	

New Path... New Sub-Path... Delete Path... Default Use Atmos Renderer

Active Busses: 10

Output Meter Path: out 1-8

Default Output Bus: 7.1.2 Stereo, ...

Export Settings... Import Settings... Restore from Session Apply to all tabs Cancel OK

Routing & Panning

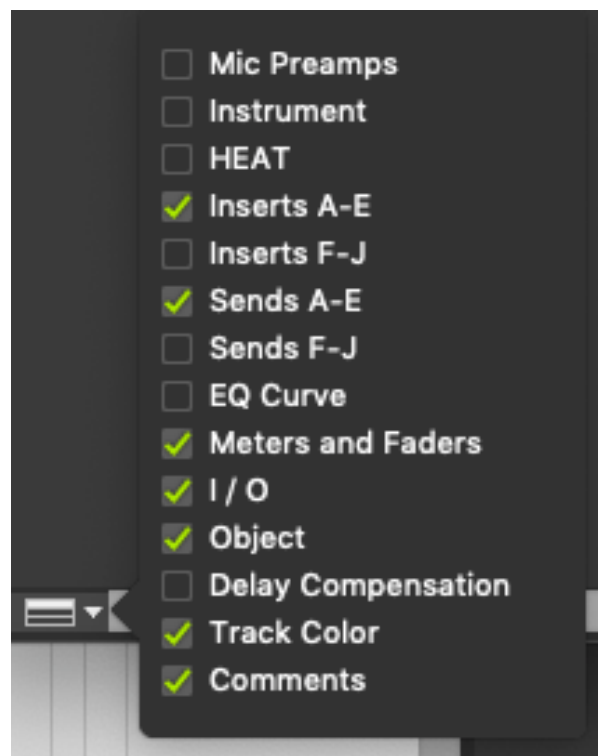
We've already enabled the 'Object' view in both the 'Edit' & 'Mixer' windows in this template. This allows us to view, make and change 'Object' assignments per track (across the 118 objects we've configured), as well as toggling a track's output between the 'Bed' & 'Object' paths.

Bed

A 'Bed' is our 'channel based' main output bus of 7.1.2 (LCR, LFE, Side & Rear Surrounds, and a pair of Overhead Surround Channels – these have no forward/backward separation, just a stereo overhead). Think of this as your main mix bus.

Object

An 'Object' has far more accurate panning, as it's all governed by metadata rather than channel-based pan laws. This allows us to pan audio within a virtual 3D space, which will be rendered to be accurately represented in the listeners environment. Objects are great when you have specific discrete sounds which want defined positions. We'd recommend trying to use objects when mixing Dolby Atmos Music, because at 48kHz we have about 118 objects available, generally allowing each instrument or voice to have an independent panner.



Routing & Panning continued:

In our template, we've included a pink noise signal generator and some pan automation to demonstrate the panner in the 7.1.2 bed, followed by panning the same noise as an object. It fades in from the very start of the session, and shouldn't be too loud – keep the volume control to hand to adjust for your environment, and you should hear it pan through extents of the 3D space.

When we later place some audio on these tracks (Object 11-128) we can immediately interact with our audio in Dolby Atmos. The native 3D Panner in Pro Tools gives us access to X, Y and Z (height) controls, as well as a 'Size' parameter – all of which are fully automatable within the Pro Tools timeline.



Routing & Panning continued:

It is important to be aware that when mixing in Dolby Atmos, you can only address the LFE (Low Frequency Effect) channel when a track is routed to the bed. The LFE control is greyed out when routed as an object. To manually route to the LFE in addition, you can use an aux send from your mixer to an LFE sub-path of a bed, however this isn't necessary as all objects and speakers for Dolby Atmos playback systems are designed to be 'full range'. It's worth noting that anything routed to the LFE won't make it into the default stereo or headphone renders, so consider using EQ or level to enhance the bass rather than using the LFE.

When using the 3D panner with a mouse, clicking in the grid will give us control over X and Y. By holding the Shift key, we now have independent control over the height, and using Shift + scroll wheel gives us access to the Size parameter. There are also different modes available to speed up the process of panning in 3D. By default, we're in 'FreeForm' mode but have a play to familiarise yourself with each of the modes, which are:



Freeform

Completely independent control over X, Y, Z & Size



Wedge

Moving front to back goes from no height to full height (middle) & back down to no height at the rear



Dome

Like a hemisphere or dome, low around the edges, high in the middle.



Ceiling

Full height for the rear $\frac{3}{4}$ of the cube, diving down towards the front in the final $\frac{1}{4}$

Routing & Panning continued:

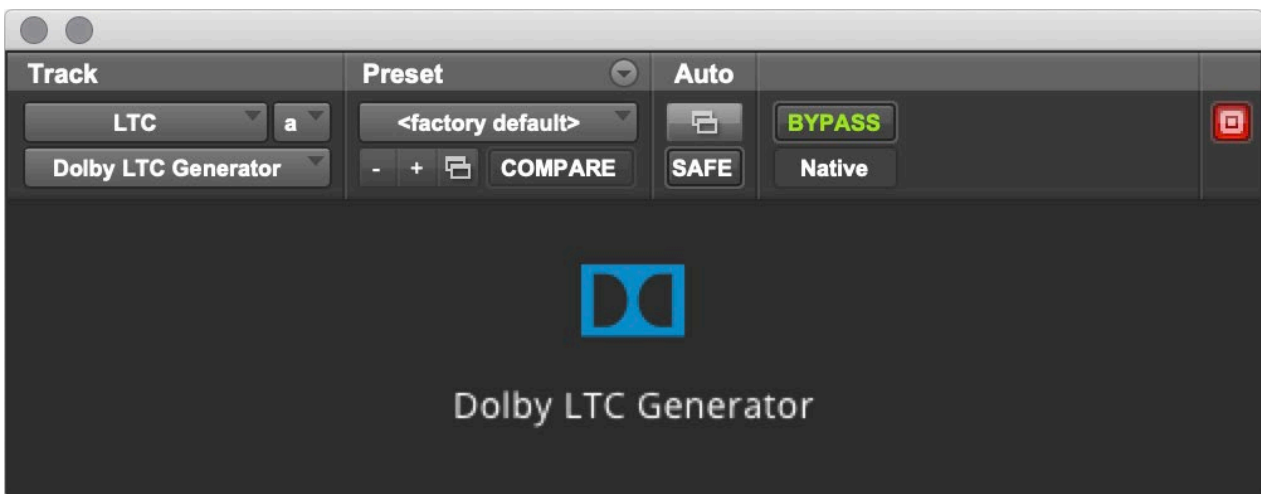
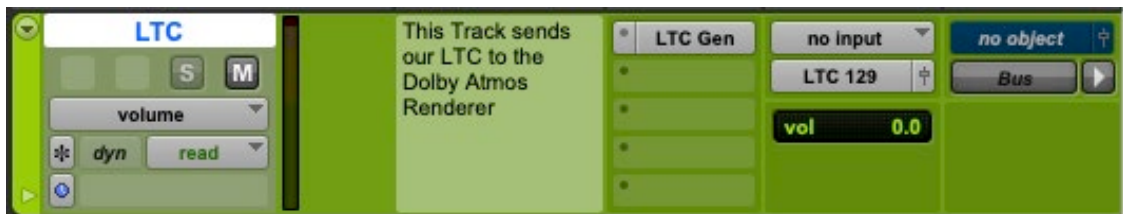


Now you're all set-up, you should be ready to start mixing in Dolby Atmos by simply importing some existing audio into this template. File -> Import -> Audio, converting to 48kHz if necessary. We can essentially mix as normal within the Pro Tools environment, utilising the additional pan options available and not really having to touch the DAPS software. I'd recommend starting with some static pan positions, adding some layers of instrumentation to build a good starting point for your soundscape, possibly experimenting with the binaural headphone render. Once you've got a basic mix together, move onto the next step of creating a master file. We'll need to set and check a few things.



Creating your first Dolby Atmos Master File (DAMF)

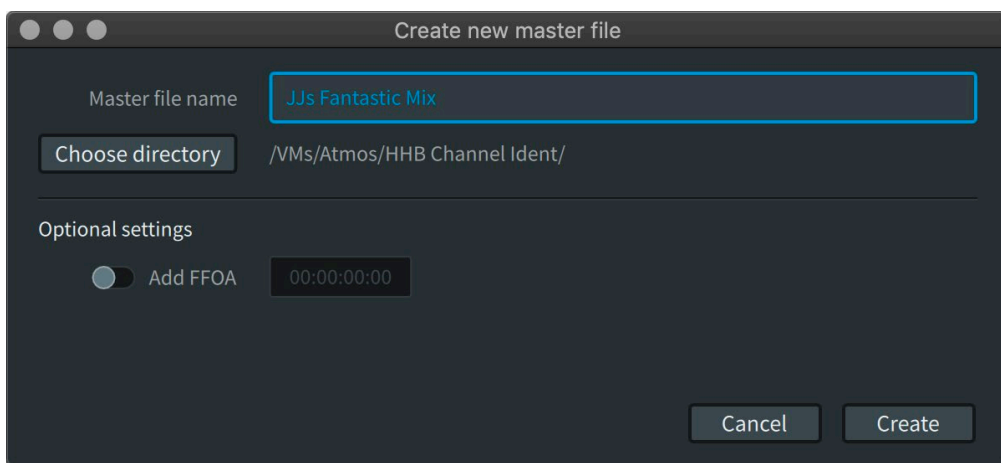
DAPS needs to chase the Pro Tools timeline in order to create a finished master. This can be done via Linear or MIDI Timecode. LTC is preferable, and Dolby have provided a handy LTC Generator plug-in with the v3.4 or higher update to DAPS. We used this plug-in in our template by creating a mono 'aux' track in Pro Tools, adding the 'Dolby LTC Generator' plug-in, set it to 'solo safe' (Command+click on the 'Solo' button) and routing it to Output Channel 129 (matching the Dolby setting from earlier).



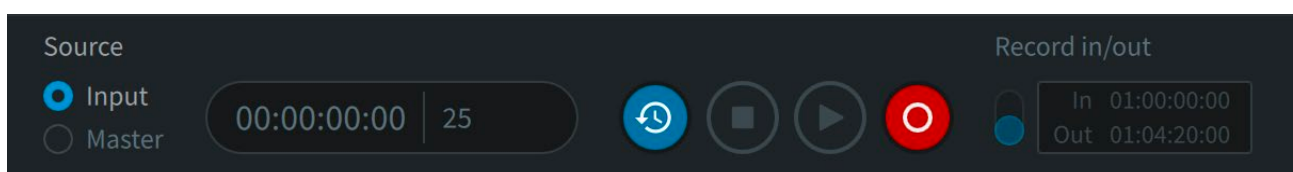
Creating your first Dolby Atmos Master File (DAMF) continued:

Next, move back to DAPS in order to create a DAMF, which is the master file format of a Dolby Atmos mix.

From the 'File' menu, select 'New Master File' (Command+N). We then choose a 'Master file name' and select where to save the file to. We can safely ignore the 'Optional settings' for 'FFOA', which applies to film and TV more.



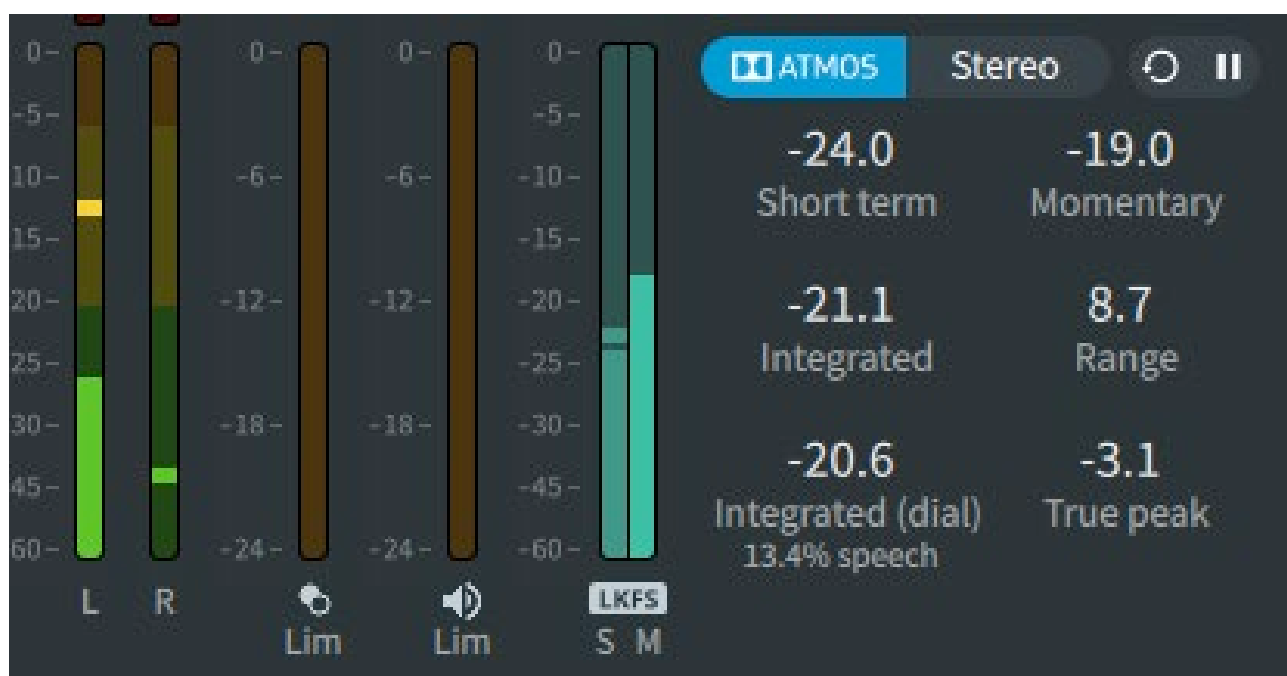
We need to treat the mastering portion of the process like recording our mix to tape / DAT / CD etc. It's a real time record pass from Pro Tools to DAPS. The best way to set up for this is to select a 'Record in/out' point in DAPS. It's important to have your session start somewhere later than 00:00:00:00 as this won't allow the software enough time to lock to the LTC before audio starts playing. Our template is set up so that the audio start is at 01:00:00:00, and so let's set the record in/out to match the duration of the track. We can then record arm DAPS and move back to Pro Tools. Also, make sure that timecode chase (blue clock circle) is enabled. This is all done at the top of the DAPS window.



Creating your first Dolby Atmos Master File (DAMF) continued:

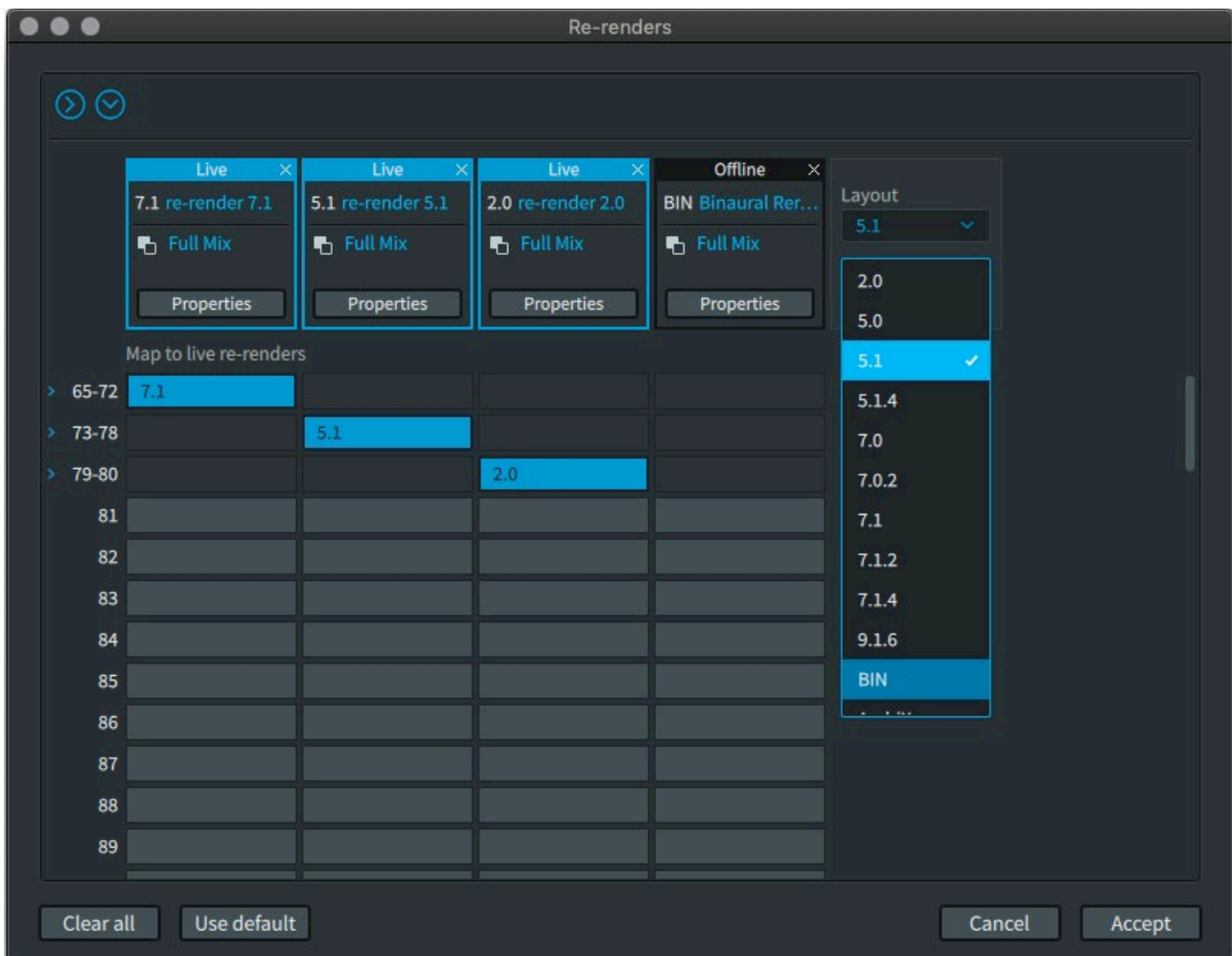
Now we simply need to play through our mix, but should either use Pre-Roll or move our play head to a couple of seconds prior to our 'Record in' point, to allow for the timecode chase to lock. The Dolby software should change from a blinking red to a solid red once the 'in' point is reached, and automatically disarm once past the 'out' point at the end of our mix.

Throughout this process, you may have noticed the loudness metering. That is outside of the scope of this 'Getting Started' guide, but we go into measuring loudness in Dolby Atmos in a separate blog post.



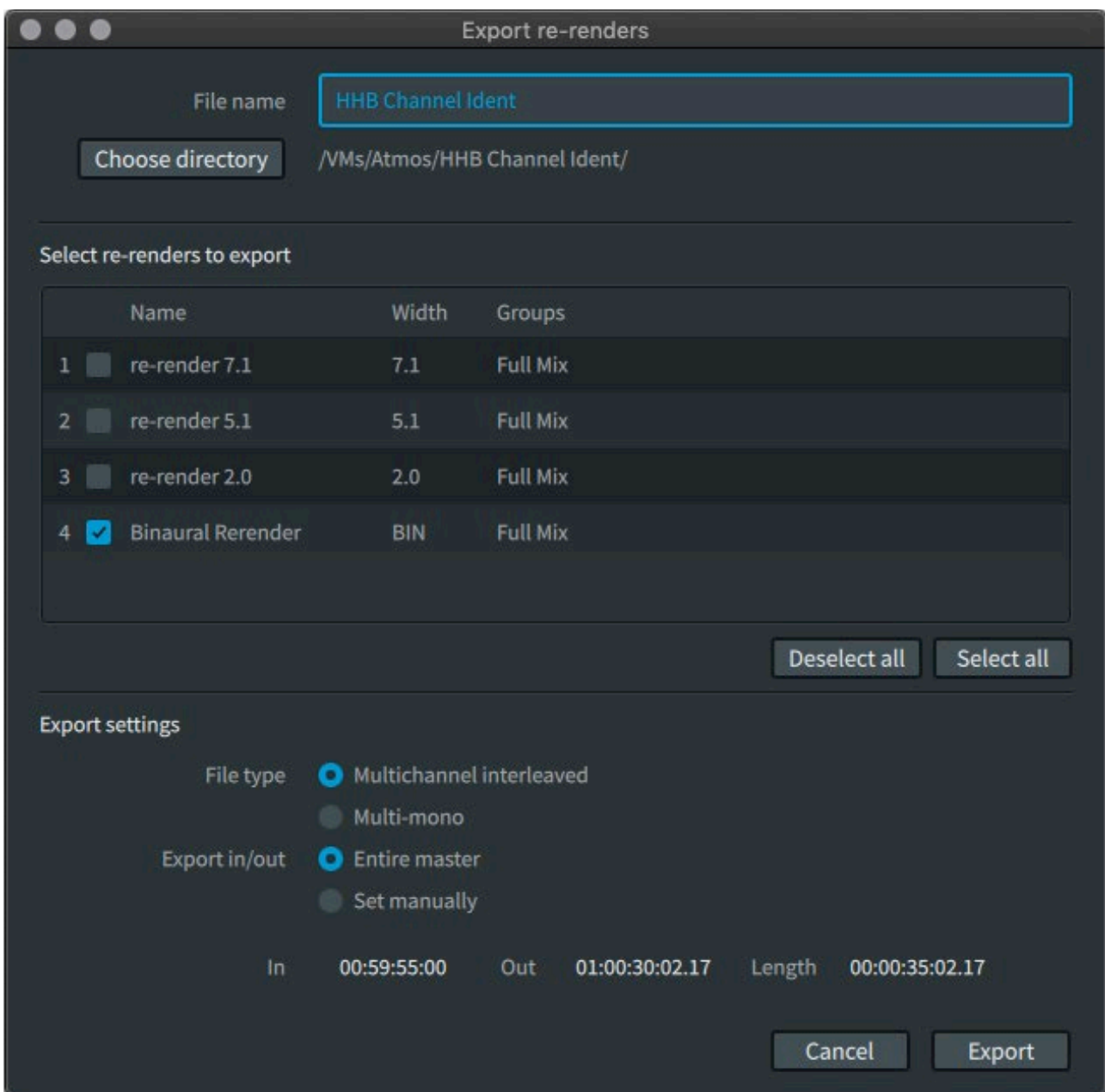
Creating your first Dolby Atmos Master File (DAMF) continued:

This mix now exists as a DAMF, which can be delivered to other DAPS users, but not easily reviewed without those tools. We do however have the option to export the mix. In order to select the channel format we'd like to export, first we must define them in the **'Window / Re-renders'** page (Command+R). By default, we have a 7.1, 5.1 & 2.0 Stereo, but we may well want to export the binaural mix. To do this, select 'BIN' in the 'Layout' drop-down menu, then click 'Add'. We can rename this re-render by selecting 'Properties', and this name will persist through our later export function.



Creating your first Dolby Atmos Master File (DAMF) continued:

Once we've added this option, select 'Accept', then go to 'File / Export Audio / Re-renders' (Command+E). This dialog allows us to select which re-render exports we want, and where to export them. There are options for interleaved or multi-mono BWAVs, and we can also define a time range. The resultant .WAV file can be easily played on many systems. There are also export options for other deliverable formats such as .mp4 in the **File / Export Audio** menu should you require them.





Creativity & Review

As with any mix it's worth playing it back on a number of systems and for a variety of people, particularly when working with binaural content. There aren't any hard or fast rules regarding mixing in Dolby Atmos, but it's fair to say that just because we have all these new options available to us doesn't mean we have to use them all at once! Less can still be more, and our approach is usually about adding layers of detail rather than a mass of sounds whizzing around your head. Certain pan automation techniques with width, height and movement are more applicable to particular genres – try to experiment with the tools available and hopefully it'll help to expand your creative possibilities.

With regard to further learning, Dolby include a really useful guide resource, accessible via **Help / Dolby Atmos Renderer Guide**. It includes lots more information for further reading and is also searchable if you have any specific queries. They also offer some additional instructional video content available [here](#), and check out our blog for more articles on Dolby Atmos Music, Pro Tools, and much more.

